Hoopa Tribe Leads in Fisher Conservation

by Mark Higley

The Hoopa Valley Indian Reservation, the largest reservation in California, is located in a remote area of Humboldt County approximately 90 miles (145 kilometers) south of the Oregon border. Composed of 90,000 acres (36,422 hectares), it is surrounded by the Klamath-Trinity mountains. The reservation is centered on the tribe's ancestral homelands in the Hoopa Valley and is bisected by the Trinity River. The Hupa people have occupied these lands for thousands of years[1].

Although all living things are held sacred in the tribe's traditional culture, it was not until the listing of the northern spotted owl (*Strix occidentalis caurina*) as a threatened species in 1990 that the tribe hired a wildlife biologist. The Bureau of Indian Affairs (BIA), an agency of the U.S. Department of the Interior, had been in charge of the tribe's forest and natural resources management until 1989, when the tribe exercised its sovereignty and became self-governing. The BIA's forest management had emphasized economics over tribal cultural concerns, at the expense of wildlife and most other natural resources. The tribe's economy is almost entirely timber-based, with an annual harvest of approximately 9.3 million board-feet of old-growth Douglas-fir. However, the tribe takes a holistic approach as it struggles to balance cultural values and socio-economic needs on a land base that represents only a fraction of its original territory.

Since 1992, the BIA has provided base funding to the tribe for the purposes of Endangered Species Act (ESA) compliance and surveys and monitoring for northern spotted owls through the tribe's self-governance compact. The tribe's struggling economy makes it difficult to fund wildlife programs on its own, no matter how important wildlife species are to the people and their culture.

When the U.S. Fish and Wildlife Service launched the Tribal Wildlife Grants (TWG) and Tribal Landowner

Whidehch, Little Sister in the Hupa language, on the day of her release from captivity. She was bottle fed for three weeks and held in large enclosures until demonstrating that she could capture and kill natural prey readily.

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[1]The Reservation, town, and location are referred to as "Hoopa," while the people are referred to as the "Hupa People."

Incentive (TLIP) programs to provide much needed funding for wildlife work, the Hoopa Tribe was ready. These grant programs have benefited many tribes nationwide, and the Hoopa Tribe has been successful in obtaining both TLIP and TWG grants. The TWG grants have been focused primarily on researching the status of the fisher (*Martes pennanti pacifica*).

The focus on the fisher stems from its cultural importance to the tribe; its hides are used in making ceremonial dance regalia. A "distinct population segment" (a term sometimes used under the ESA to delineate a separate portion of a species that requires different treatment by the law) of the fisher within California, Oregon, and Washington is a candidate for federal protection under the ESA. Because of the fisher's cultural importance, the potential for federal listing, and the animal's association with older forest habitats, the Hoopa Tribe has taken an active approach in collecting information about the fisher on tribal lands. The information collected will help shape future forest management decisions and will prepare the tribe for working with the Service on revisions to the tribe's forest management plan.

Starting in 1992, surveys conducted across most of the reservation found that the fisher was quite abundant compared with surveys conducted elsewhere. During 1996 to 1998, a radio-telemetry study was conducted on a 21-square-mile (55-square-km) area of the southeast portion of the reservation. Researchers captured 56 fishers (36 females, 20 males) to radio collar and, in some cases, replace old collars. The main emphasis of this study was to identify and describe fisher rest sites, although some reproductive dens also were found.

Objectives of the first TWG grant included several ambitious tasks, including the study of den site selection and the feasibility of studying fisher dispersal. To accomplish these tasks, tribal members and others involved in the project set out to radio-collar 15 to 20 adult females. Modeling of rest and den site selection variables will help the tribe develop habitat protection guidelines for the fisher. In addition, we attempted to mark each fisher kit produced in these dens with a passive integrated transponder (PIT) tag so that they might be identified when they grew large enough to be fitted with radio transmitters prior to their dispersal.

During more recent trapping efforts, we quickly learned that fishers were much less abundant than from 1996 to 1998. We struggled to capture 14 females in our first year, even after expanding the study area. In fact, we documented a significant decline in the fisher population by using camera stations to photograph ear-tagged animals in the portion of the recent study area that overlaid the 1996-1998 study area. In addition to the population decline, we found that the sex ratio had changed from nearly two females per male to one per male.

We captured and tagged 85 juvenile and adult fishers between 2004 and 2007, and radio-collared 42. Our close monitor-

Chuck Goddard removes a fisher kit from a den so that a PIT tag can be injected beneath the skin. Similar tags are commonly used to mark pets.

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ing of these animals over the years has given us some insight into the causes of fisher mortality. During the current study, we have witnessed 16 mortalities (13 females and three males). One was killed by a vehicle and three we suspect died from disease. The other 12 deaths (11 females and one male) were the result of predation. Suspected predators include bobcats, mountain lions, and canids (coyotes and domestic dogs). Throughout much of the fisher's range, predation is not considered an important source of mortality; however, in our region, body size is substantially smaller, and there are plenty of larger predators.

Of the 28 fisher kits marked prior to weaning, we recaptured and radio collared nine. Five of the eight collared kits have established home ranges, two dropped their collars during dispersal, and two died, most likely from disease. Three of the eight were born in March 2007 and later radio collared. One of these was actually rescued from a den after its mother was lost to predation. The young animal was bottle fed for three weeks, then held at an off-exhibit display at the Sequoia Park Zoo in Eureka, California. She was then transferred to an enclosure in the woods at Hoopa within her mother's home range, where she was introduced to natural live prey. She was released October 3, 2007, and remained in her mother's home range until December 3, when she began to move northwest and left the reservation. On December 30, she slipped out of her collar, and we were unable to recapture her due to snowy weather that made access to the area impossible. The other two kits born in 2007 were sisters. One of them dispersed to the south and established a home range near the town of Willow Creek, and the other has remained in her mother's home range. The two older female kits produced litters of kits in 2008 on the reservation.

The Hoopa Tribe has formed a partnership with the non-profit Wildlife Conservation Society, which has provided the director for the fisher research project. In addition, the tribe has collaborated with Humboldt State University and the non-profit Integral Ecology Research Center to better understand mortality causes and the role of disease in fisher ecology. These partnerships, and additional financial support and technical assistance from the Fish and Wildlife Service's Yreka Field Office and the U.S. Forest Service's Redwood Science Laboratory, have resulted in many advances in the knowledge of fisher ecology.

The stakeholders on Indian lands (tribal members) often live on the same lands managed for commercial resource extraction. On tribal lands like the Hoopa Valley Indian Reservation, culture, tradition, subsistence, and recreational use take precedence over purely economic gain. But implementation of forest management plans on tribal lands must continue due to the strong economic need. We believe that, if tribes were afforded sufficient funding for ecological monitoring programs, the effectiveness of tribal management would be documented and would eventually provide an example of effective forest management that could be emulated on federal lands.

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Tribal member Aaron Pole holding a newly radio-collared juvenile female that was PIT tagged at 5 weeks of age while in a den with two siblings. She eventually dispersed only a couple of miles from her natal area.

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